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Forest Insect and Disease Management

5230
BIOLOGICAL
EVALUATION R2-77-3

MOUNTAIN PINE BEETLE

Middle Park, Colorado

Arapaho National Forest,
BLM, State and
Private Lands

June 1977

Rocky Mountain Region

U.S. Department of Agriculture Forest Service

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INTRODUCTION

The mountain pine beetle, *Dendroctonus ponderosae* Hopkins, continues to cause lodgepole pine mortality on National Forest, BLM, State and private lands in the Middle Park area of Colorado.

On May 31 thru July 2, 1977, Kent Eggleston, Ronald MacDonald and Byron Plan, Biological Technicians, conducted a brood sample survey of the infestation. Cole's [1/] sampling procedure was used to make trend predictions for the 1977 infestation. Samples showed that the population is static to increasing.

TECHNICAL INFORMATION

CAUSAL AGENT: Mountain pine beetle, *Dendroctonus ponderosae* Hopkins

HOST: Lodgepole pine, *Pinus contorta* Douglas

EXTENT OF INFESTATION: Lodgepole pine mortality occurs in scattered, overstocked and larger diameter stands throughout the Middle Park area of Colorado.

LIFE HISTORY: The mountain pine beetle has one generation per year. Adults attack trees from July through August by boring through the bark to the cambium. The females then tunnel upward for 12 inches to 30 inches (these tunnels are called egg galleries). The females lay eggs alternately in individual niches along each side of the gallery which is then packed with frass. After hatching, the larvae feed in individual channels (larval galleries) at right angles to the egg gallery in the phloem. The insect overwinters in the larval stage. In the spring, when the larvae are fully developed, they excavate an oval chamber at the

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1/ COLE, W. E. The mountain pine beetle in lodgepole pine. Progress Report - Study 1. USDA, For. Serv. Int. 4500-FS-INT-2201. 25 pp. (For Internal Use Only)

end of the larval gallery and pupate. Finally, mature adults emerge from the chamber by boring through the outer bark and fly to attack new trees, completing the generation.

METHODS

Two 6-by-6-inch bark samples were taken at dbh on opposite sides of currently infested lodgepole pine trees at three locations in Middle Park (see map). Using Cole's sequential sampling plan, the trend of the beetle population at each sample area was categorized as decreasing, static or increasing.

RESULTS AND CONCLUSIONS

Two of the three locations showed the mountain pine beetle population to be static, while the third location indicated the population to be increasing, the overall prediction is static to increasing. 1976 surveys (2) indicated that the population was decreasing. 1977 mountain pine beetle losses in Middle Park are not expected to be significantly greater than 1976 losses.

Sample sites were difficult to locate due to the lack of brood trees. FI&DM personnel will continue to monitor the infestation.

RECOMMENDATIONS

Reduction of the inventory of large diameter trees along with diseased and damaged trees is the recommended control to prevent future build-ups of mountain pine beetle in lodgepole pine. Land managers should look to getting ahead of the beetle by bringing more land under management. Direct control is not recommended at the present time.

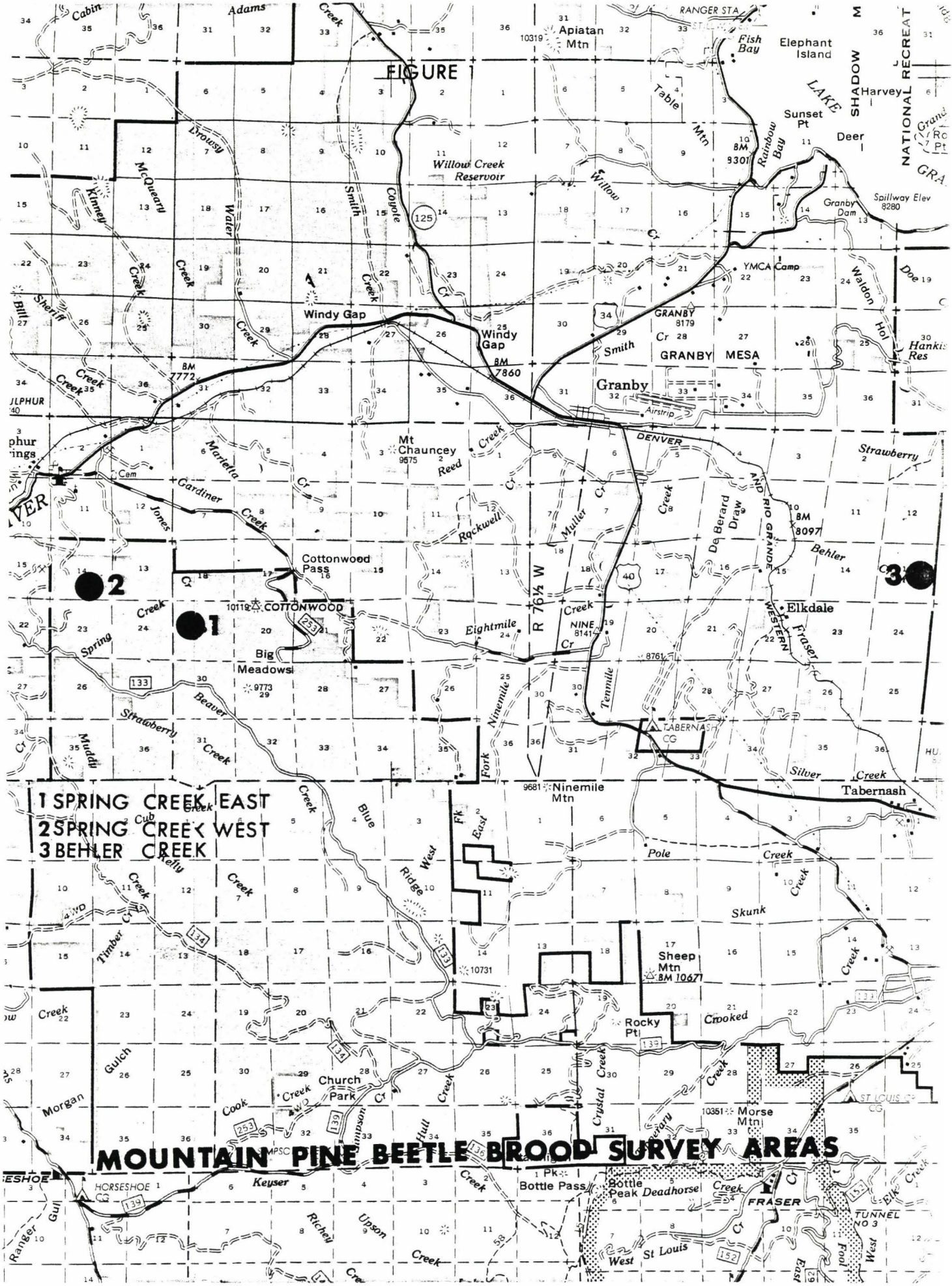
FIGURE 1
1 SPRING CREEK EAST
2 SPRING CREEK WEST
3 BEHLER CREEK
MOUNTAIN PINE BEETLE BROOD SURVEY AREAS
Apiatan Mtn
Fish Bay
Elephant Island
Harvey
Sunset Pt
Deer
Table Mtn
Rainbow Bay
Willow Creek Reservoir
Granby Dam
Spillway Elev 8280
YMCA Camp
Windy Gap
GRANBY
GRANBY MESA
Granby
Airstrip
DENVER AND RIO GRANDE WESTERN
Mt Chauncey
Cottonwood Pass
COTTONWOOD
Big Meadows
Eightmile
NINE
Elkdale
Fraser
TABERNASH CG
Ninemile Mtn
Tabernash
Silver Creek
Pole Creek
Skunk Creek
Sheep Mtn
Rocky Pt
Crooked Creek
Church Park
Morse Mtn
Bottle Pass
Bottle Peak
Deadhorse Creek
FRASER
TUNNEL NO 3
HORSESHOE CG
ST LOUIS CG
Strawberry Creek
Beaver Creek
Muddy Creek
Spring Creek
Timber Gulch
Morgan Gulch
Cook Creek
Keyser Creek
Ranger Gulch
Richey Creek
Upson Creek
Hull Creek
Crystal Creek
Ninemile Fork
Tennile Creek
Reed Cr
Muller Cr
Rockwell Cr
Gardiner Creek
Martella Cr
Jones Creek
Willow Cr
Smith Cr
Coyote Cr
McQueary Creek
Kinney Creek
Water Creek
Sheriff Creek
Bill Creek
Cabin Creek
Adams Creek
Trousy Creek
Blue Ridge West
Blue Ridge East Fk
Kelly Creek
Cub Creek
Deberard Draw
Behler Cr
Strawberry
Waldon
Hot
Doe
Hankins Res
R 76½ W
40
125
133
134
139
152
253
4WD

TABLE 1

HOT SULFUR MPB BROOD COUNT - 1977

SAMPLE AREA	NUMBER TREES	NUMBER SAMPLES	AVERAGE D.B.H.	AVERAGE BROOD	AVERAGE ATTACKS	AVERAGE IN. GAL.	TOTAL BROOD	WOODPECKERING	BASAL AREA	ELEVATION	POPULATION TREND
Spring Creek East	6	12	13.95 ± .95	9.17 ± 3.88	2.17 ± .46	28.75 ± 3.66	110	Moderate	120	9,000	Increasing
Spring Creek West	4	8	10.10 ± .80	4.63 ± 2.18	1.75 ± .59	22.38 ± 5.87	37	Heavy	150	8,900	Static
Behler Creek	3	6	10.30 ± 1.36	4.33 ± 2.85	3.17 ± .65	17.83 ± 4.87	26	Light	110	9,200	Static
TOTALS	13	26	11.92 ± .77	6.65 ± 2.01	2.27 ± .32	24.26 ± 2.75	173	Moderate			Static

± values are one standard error